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Priming of Narrative Language in Young Adults

by

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### Priming of Narrative Language in Young Adults

Narrative language skills are important for communication and literacy in both children and adults (Hughes, McGillivray, & Schmidek, 1997). Narratives are used to create stories, recount events, and evaluate experiences in daily life. Comprehension and production of narratives depend upon the knowledge and coordination of phonology, morphology, semantics, syntax, and pragmatics (McCabe & Rollins, 1994). A well-formed narrative involves a series of organized and creatively connected events that have a clear purpose and allow others to become emotionally involved (McCabe & Peterson, 1984).

Researchers have identified several forms of narrative language such as personal, fictional, account, eventcast, and health narratives. A *personal* narrative details a factual account of something that has happened to the narrator (McCabe, Bliss, Barra, & Bennett, 2008). For example, a personal narrative could involve a teenager telling her parents about a scary driving experience. *Fictional* narratives include story elements (places, characters, events) that narrators create in their imagination (Genette, Ben-Ari, & McHale, 1990). For instance, a fictional narrative could be a bedtime story an adult creates about a fairy princess in a faraway land. *Account* narratives are descriptions of previous personal experiences that are unprompted (Heath, 1986). When a particular experience is repeated multiple times and becomes familiar, notions are formed about the standard routine. *Eventcast* narratives are explanations of an ongoing activity (Heath, 1986). Children frequently produce eventcast narratives when describing play activities and events occurring in the moment. Lastly, *Health* narratives are used by patients to describe their health to a professional and are important to ensure proper care (Wengryn & Hester, 2011). According to Nielsen-Bohlman (2004), patients and health care professionals interact and

exchange critical information daily. Patients must be able to convey their experiences and concerns in order to receive adequate assistance with health care needs.

McCabe and Bliss (2003) emphasize that narrative language is a critical tool in academic, social, and cultural learning. Additionally, they believe children use narrative language to fulfill their social and emotional needs. These needs include expressing feelings and opinions, creating and sustaining friendships, and sharing important information. Whether an individual is telling an amusing story or receiving critical medical care, narrative language is used daily and is essential for effective communication and relation with others.

Although narratives are being used increasingly in the assessment of language disorders, it is not clear if current methods of assessment accurately measure narrative performance, especially in adults. Existing literature suggests that the use of priming improves other areas of language performance, so perhaps it could also improve the performance of adult narratives. Though it is reasonable to assume adults' narrative productions would be enhanced by the priming of a model narrative, this has yet to be studied.

Narratives are an important aspect of language that are used daily by individuals of all ages. Narrative language allows for human interaction, learning, and personal expression. The purpose of this study was to investigate the role of priming on adult narrative production. In addition to the definition and function of narratives mentioned previously, this literature review examines the structure and development of narrative language as well as the typical assessment of narrative comprehension and production. Literature regarding the role of observational learning, the formation of schemata, and the effects of priming on language production are also discussed thoroughly.

### **The Structure and Development of Narratives**

Well-formed narratives are comprised of components of macrostructure and microstructure (Berman, Slobin, Strömqvist, & Verhoeven, 1994). Macrostructure refers to the hierarchical organization of narrative language. According to Justice, Bowles, Kaderavek, Ukrainetz, Eisenberg, and Gillam (2006), the components of macrostructure consist of the setting, initiating event, internal response, internal plan, attempt, direct consequence, and reaction. McCabe & Peterson (1984) describe these macrostructural elements in detail. The setting establishes the tone of the entire narrative by introducing the characters, location, and time of events. The initiating event is often a problem and is what prompts the characters to respond in some way. The internal response is characterized by how the characters react to the initiating event. This could be presented in the form of an inward feeling or short dialogue. The internal plan consists of the actions the characters are considering taking in response to the initiating event. An attempt occurs when the characters eventually take action to solve the problem of the initiating event, leading to a direct consequence. The direct consequence is simply the result of an attempt. Narrators conclude the story by including a reaction that expresses how characters feel about the consequences of their attempts. Although these components of macrostructure are important, elements of microstructure are also necessary to create a well-formed narrative.

Microstructure refers to the internal structures found in a narrative (Justice et al., 2006). In general, the microstructure of narrative language includes the overall cohesiveness of the story, looking at how all of the individual pieces come together to form the finished product. The internal structures of microstructure include nouns, action verbs, conjunctions, temporal adverbs, and causal adverbs (Justice et al., 2006). Microstructural components of narrative language also

involve aspects of grammatical complexity and the total number of words used (Westerveld & Gillon, 2008). Components of macrostructure and microstructure are highly connected and are important for narrative language proficiency.

Young children may not use all of the components of macrostructure and microstructure effectively. As children age, however, their narrative comprehension and production improve and become more complex (Berman et al., 1994). The ability to produce a well-formed narrative is a challenging task that requires word knowledge, structural knowledge of plot development and sequencing of events, and also linguistic knowledge of complex syntax (Hudson & Shapiro, 1991; Kaderavek & Sulzby, 2000; Liles, 1993; Owens, 1996; as cited by Colozzo, Gillam, Wood, Schnell, & Johnston 2011). In addition to simply having the diverse knowledge of these components, producing a narrative depends upon the ability to develop and coordinate all aspects while speaking. Due to the extended period of time a narrator is expected to talk without interruption, producing narratives requires different rules than are necessary to be successful in conversational speech (Haynes & Shulman, 1998). The narrator is expected to maintain the topic, create coherent sentences containing all necessary elements of macrostructure and microstructure, use context appropriate language, and continue speaking without any external contribution (Haynes & Shulman, 1998).

Unlike conversational speech, the production of narratives requires the speaker to be in full control of all information. Speakers must actively create a storyline without pausing to think through what to say next or how to most appropriately phrase their thoughts (Colozzo et al., 2011). In addition, speakers are required to organize their ideas into grammatically correct sentences that successfully resolve the plot and fulfill all of the listener's expectations (Shapiro & Hudson, 1991). According to Bruner (1990), a successful narrator creates a story by blending

sentences that logically combine characters and their motivations, their circumstances, and the succession of their actions. A task this complex understandably proves difficult for many children (Colozzo et al., 2011). As children mature, the complexity of narrative language increases due to the developmental progression of their semantic and syntactic knowledge (Shapiro & Hudson, 1991). In addition, because of their growing intellect and increasing life experiences, children's narrative language progressively encompasses more macrostructural story elements as well (Shapiro & Hudson, 1991). These increased story elements include aspects such as multiple conflicts, elaborated endings, and internal character responses.

By the time children have completed elementary school, they should be able to create elaborate narratives that include detailed descriptions of multiple events, complex sentence structure, fully developed characters, temporal and casual adverbs, and narrator reactions to the problems characters' encounter (Shapiro & Hudson, 1991).

The ability to produce quality narratives is a predictor of future language and literacy, and communicative competence (Bishop & Edmundson, 1987). Concerning literacy, narrative language plays a fundamental role in the ability to comprehend readings and write effectively. According to Speece, Roth, Cooper, and De La Paz (1999), proficiency in narrative language becomes even more crucial as children age and are expected to comprehend increasingly lengthy and abstract readings. In addition, Speece et al. concluded that the language aspect of academic readiness may be predicted by narrative language production. Not only has narrative ability been shown to be a predictor of future language and academic performance of children with typical development, but it has also proven to be a predictor of children with atypical development (Fazio, Naremore, & Connell, 1996). Children with language disorders often have problems understanding and producing narratives. Research has shown that narratives of children with

language impairments are generally less involved, complete, and correctly structured than those by peers developing typically (Bishop & Adams, 1992). As a result of the difficulty these children face comprehending and producing narratives, their social and educational development is negatively impacted (Mehta, Foorman, Branum-Martin, & Tayler, 2005 as cited by Peterson, Gillam, & Gillam, 2008).

### **Assessment of Narrative Language**

Due to the importance of narrative comprehension and production, clinical assessment of narrative language is common (Justice et al., 2006). Many researchers have recommended that clinicians evaluate narrative language as a regular part of language assessment (Botting, 2002; Fey, Catts, Proctor-Williams, Tomblin, & Zhang, 2004). The increasing awareness of the value of clinical narrative assessment has led to the development of numerous evaluation tools (Justice et al., 2006). There are two common methods of narrative language evaluation: norm-referenced testing and criterion-referenced testing (Peterson et al., 2008).

Norm-referenced testing is a standardized measure that compares an individual's performance to a comparison population. At the end of the assessment, a standard score is calculated indicating how far the individual's score is from the mean of the sample (Anastasi & Urbina, 1997). Norm-referenced testing is a relatively quick and easy method of assessment. Criterion-referenced testing, on the other hand, does not compare individuals to each other but instead is used to determine the knowledge and proficiency of one individual (Bond, 1996). This type of assessment is useful when determining mastery of a particular task, such as producing the plural [s]. According to Petersen, Gillam, & Gillam (2008), both norm-referenced and criterion-referenced testing are valuable when evaluating narrative language of children and adults.



Although time-consuming, language sampling is a common criterion-referenced measure used to evaluate the language content of a narrative (Hadley, 1998). In general, it allows for closer examination of the macrostructural and microstructural elements, as well as analysis of the story length and complexity (Hughes et al., 1997; Justice et al., 2006; Ukrainetz, 2006). A language sample analysis can provide descriptive information about the mean length of utterance, the number of different words, the number of total words, and also the number of complete and intelligible utterances (Justice et al., 2006). There are many techniques that can be utilized when eliciting a language sample. A common method used with children is to ask them to create a story based on a wordless picture book such as *Frog, Where Are You?* (Mayer, 1969). This particular book consists of a series of illustrations depicting a boy and his attempt to find an escaped frog. Language samples can then be transcribed and analyzed using specialty software such as the Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 2000).

Though criterion-referenced testing is an effective measure, norm-referenced testing often saves time and energy (Ebert & Scott, 2014). The Test of Narrative Language (TNL) is a frequently used norm-referenced measure (Peterson et al., 2008). The TNL is an assessment of narrative comprehension and production and provides scores for three separate contexts: no picture format, five picture series format, and one picture format (Justice et al., 2006). Within each format children are asked to listen to a story, answer comprehension questions, and produce an original story of their own. The child's responses for each task are recorded and later replayed for scoring purposes. When scoring the narrative production portion of the TNL, examiners evaluate the story content as well as macrostructural and microstructural elements (Peterson et al., 2008). Not only does the TNL compare each individual's ability to comprehend and produce narratives, but it also distinguishes between children with and without language impairment

(Colozzo et al., 2011). Criterion- and norm-referenced testing are both useful methods for assessing narrative language, revealing the valuable information of language ability in children and adults.

### **Observational Learning: How Schemata Are Created**

As mentioned previously, there has been extensive research on narrative language and how it effects numerous facets of daily life. Of particular importance is the role of narrative language on social relationships and educational performance. Narrative language, however, is not the only variable contributing to these things. For years, psychologists and behavioral scientists have been studying the manner in which children learn from their environment and how their ability to learn also contributes to their emotional, social, and intellectual development (Lancy, Bock, Gaskins, 2010). Although there are numerous ways children learn from their surroundings each day, much of what is learned occurs simply through watching others (Lancy, Bock, Gaskins, 2010). As a result, observational learning has been a topic of considerable attention.

Observational learning is the method of learning by observing others perform an action, storing that event in memory, and then reproducing that action at a later time (Torriero, Oliveri, Koch, Caltagirone, & Petrosini, 2007). Put simply, it is the ability to learn to perform an action by first seeing it done. Observational learning plays a central role in how children learn from adults and is extremely important during childhood. Through the fundamental process of observational learning, children develop social skills and gain cultural knowledge and understanding (Meltzoff, 1999; Byrne & Russon, 1998).

Albert Bandura's Bobo doll experiment revealed the powerful effect of observational learning. In his experiment, Bandura demonstrated that young children will readily imitate the

violent and aggressive behavior of an adult model (Bandura, Ross, & Ross, 1963). To begin his experiment, Bandura had one group of children watch film of an adult hitting an inflatable balloon doll repeatedly. After the video, these children were allowed to play with a replica of the doll seen in the video. A separate group of children also watched film of the doll but were not exposed to the aggressive behavior. In the end, the children who were exposed to the aggressive model were more likely to engage in aggressive behavior than those who had not been exposed to the model. Although this particular study examined the role of modeling on aggression, it demonstrates the potent effect of observational learning. There have been numerous studies conducted on observational learning and how modeling changes behavior. These studies have concluded that behavior does, in fact, change through observation, even if the observation was unintentional (Fryling, Johnston, & Hayes, 2011).

Bandura (1971) describes observational learning as being driven by four sub-processes: attention, retention, motor reproduction, and incentive or motivational processes. Bandura & Jeffrey (1973) explain these processes in detail. According to them, attention processes control the sensory perception of a modeled action, while retention processes transform the brief model into lasting guides in memory. Motor reproduction processes control the merging of component actions into patterns needed to reproduce the model. Lastly, incentive or motivational processes determine whether the learned responses will trigger a replication of the model. These sub-processes not only explain how modeled behaviors can be imitated immediately following the observation, but also how modeled behaviors can be reproduced later under different circumstances (Bandura & Jeffrey, 1973). If an individual is to replicate a modeled behavior that is no longer present and serving as a guide, the patterns of the model must be depicted in memory. Once modeled actions are transformed into visual images and verbal symbols, they can

be used as guides for later reproduction (Bandura & Jeffrey, 1973). These guides are sometimes referred to as schemata.

A schema is an underlying mental concept that represents our basic world knowledge (Bartlett, 1932). Through life experiences, schemata are created and stored in memory making future encounters with similar situations faster and less difficult to maneuver (Milligan, 1979). These guides, or schemata, assist in children's learning about the world around them.

### **How Schemata Can Be Activated Through Priming**

Schemata that are developed as a result of observational learning can be activated to help accomplish certain tasks. These schemata can not only assist with performance of motoric and social skills, but also linguistic skills as well (Poulsen, Kintsch, Kintsch, & Premack, 1979). For example, schemata can be observed in structural, or syntactic, priming (Bencini & Valian, 2008). Structural priming concerns the influence that a previous sentence can have on the syntactic forms an individual chooses (Leonard, 2011). There have been numerous studies on structural priming demonstrating that sentences produced by speakers are, in fact, influenced by the sentences they hear previously (Bock, 1986; Bock & Loebell, 1990; Branigan, Pickering, McLean, & Stewart, 2006). Additionally, this influence can be observed when the productions do not involve the same topic or even have similar wording as the previous sentences (Leonard, 2011). For example, following the sentence *The mailman took the package from the house*, an individual is more likely to describe a picture with a sentence such as *The girl gave the broken boat to the teacher* than the sentence *The girl gave the teacher the broken boat*. Although the nouns, verbs, and prepositions are different, the target and priming sentences have the same syntactic structure.

Research suggests that adults can be primed to produce certain syntactic structures and are more likely to produce a particular construction if it is syntactically similar to one heard previously (Serratrice, Hesketh, & Ashworth, 2015). According to Bock (1986) and Pickering and Branigan (1998), common syntactic structures primed in adults include active and passive voice (e.g. ‘Alex changed the tire’/’The tire was changed by Alex’) and the double and prepositional object construction (e.g. ‘The girl gave the broken boat to the teacher’/’The girl gave the teacher the broken boat’). As indicated previously, the effects of priming are not only immediate. In fact, the effects of priming have been shown to persist even when participants listened to several filler sentences between the prime and the participant’s production of the target sentence. Bock and Griffin (2000) discovered prepositional datives such as *The driver sheepishly handed his license to the police officer* functioned as primes for picture descriptions even when 10 unrelated sentences occurred between the priming sentence and the target picture. They found that there was a reliable priming effect immediately following the priming sentence, as well as after 10 intervening sentences. As demonstrated here, priming does not necessarily have to be observed to work, it has an effect through listening alone.

Research has shown that narrative language is essential for communicating with others and navigating through life. Individuals of all ages encounter narratives daily, whether they are relaying recent events, telling a bedtime story, or observing children play. Narrative language skills are critical for children’s social and intellectual development and become increasingly complex as they age. In addition, observational learning plays a role in children’s development and is a mechanism for learning narrative schemata. Schemata can be activated through priming to enhance the performance of a wide variety of tasks. Literature suggests priming is effective on semantic and syntactic structures. Although it seems natural that priming narrative schemata

would also improve the narrative performance of adults, to my knowledge this prediction has not been tested. The current study investigates whether the effects of priming on narrative schemata will be observed in the production of adult narratives. I predict adults will include more elements in their narrative productions when primed with a model narrative, as compared to those without a model.

### **Research Questions**

1. Does priming narrative schemata increase the number of content items included in adult narrative productions?
2. To what extent does priming influence higher order elements such as casual relationships, temporal relationships, and story organization?

## **Methods**

### **Participants**

Two groups of participants were tested at separate times. All participants were students in the Communication Sciences and Disorders program at Louisiana State University (LSU) and received extra credit in a course for participating. Each completed a background questionnaire capturing information about age, current educational level, GPA, and dialect. In addition, participants answered questions regarding diagnosis of speech, language, and hearing disorders that could potentially skew results.

Originally, the first group of participants included 58 individuals who were not exposed to a model narrative prior to testing (NO-MODEL). One participant's data was not included for analysis due to a failed recording, three participant's data was not included due to recording feedback triggered by cellphone use, and one participant's data was not included due to an Esteem Implant and the presence of deaf speech. The data of five participants was not included

in the analysis, resulting in a total sample of 53. While the majority of the participants were monolingual English speaking women, two participants were bilingual, speaking both English and Spanish. Having been exposed since birth, the bilingual participants were fluent in English and, as a result, their data was included in analysis. Participants included 51 juniors and 2 master's students at LSU. Ages ranged from 19 to 23 years, with an average age of 20.19 and standard deviation of 0.62. Overall grade point average (GPA) ranged from 2.4 to 4.0, with an average of 3.36. Dialects included Southern English (41), Floridian (2), Texan (1), and variations of Louisianan (9).

At a later date, the second group of participants was exposed to a model narrative prior to testing (MODEL). The data of all participants was included in the analysis, resulting in a total sample of 23 women. Twenty participants were monolingual English speaking, two were bilingual English and Spanish speaking, and one was bilingual English and French speaking. All three bilingual participants were fluent in English, having been exposed since birth. As a result, their data was also included in analysis. Within the MODEL group, 14 of the 23 participants were juniors at LSU. There were also 3 seniors, 5 sophomores, and 1 freshman. Ages ranged from 19 to 23 years, with an average age of 20.46 and standard deviation of 1.06. Overall GPA ranged from 2.8 to 4.0, with an average of 3.32. Dialects of the MODEL group included Southern English (15), African American English (2), English (1), Northeastern United States (1), and no response (4). Results of participants with speech, language, and hearing disorders were not used in this study. There was no statistically significant difference in age or GPA between the MODEL and NO-MODEL groups.

Table 1

*Summary of Means (Standard Deviations) of Demographic Information*

Variable	MODEL (n = 23)	NO-MODEL (n = 53)
Gender		
Female	23.0	53.0
Age		
Average (SD)	20.46 (1.06)	20.19 (0.62)
Grade Point Average (GPA)		
Average (SD)	3.32 (0.32)	3.36 (0.39)

## Materials

**Narrative testing.** The Late for School subtest of the Test of Narrative Language (TNL; Gillam & Pearson, 2004) was used to test both groups of participants. The TNL was normed on a sample of 1,059 children from 20 states. Since it has only been normed on children, no standard scores were used in this study. The TNL is often selected to provide clinicians with a timely method of testing a child's narrative language abilities. The four main uses include identifying language impairment, detecting differences between narrative comprehension and narrative production, measuring improvement throughout intervention, and gauging narrative language in research studies. The TNL was administered to the participants in this study for possible future analysis comparing young adult narratives to children's narratives.

The TNL incorporates three formats including no picture, five picture series, and single picture. Each format measures both comprehension and production of narratives, for a total of six subtests. The five picture series format was the focus of the current study.



**Procedure**

To minimize background noise in audio recordings and aid in data analysis, testing of all 76 participants was conducted in sound booths at the LSU Speech-Language-Hearing Clinic on campus. Each participant signed a consent form and completed a background questionnaire.

Within the MODEL group, both the comprehension and production tasks of the five picture format were administered. The examiner began with the comprehension measure of the five picture series, *The Shipwreck Story*. During this subtest, the examiner read aloud a narrative about a young girl's art project and showed a succession of pictures illustrating the important elements of the account. Afterwards, the examiner asked a series of comprehension questions. Upon completion of the comprehension task, the corresponding production task, the *Late for School Story*, was administered. The examiner presented a series of five pictures depicting a boy and the challenges he faced getting ready for school. Participants were then asked to create a narrative based on the picture series. By administering the entire five picture format to the MODEL group, the comprehension task provided a narrative model before participants were asked to create a narrative in the production task that followed. Put simply, the participants of the MODEL group were primed with a model narrative before being asked to construct a narrative of their own.

Within the NO-MODEL group, only the production task was administered. By administering this subtest of the TNL, without its corresponding comprehension task, this group of participants was not primed with a model narrative.

Although the examiner gave specific instructions regarding what was expected for both the MODEL and NO-MODEL groups, the directions differed. For the NO-MODEL group, the

instructions were modified slightly from those given in the test booklet for the Late for School Story. The instructions are as follows.

Now I'm going to present to you a series of five pictures that go together to tell a story. I'd like you to look at them carefully and then create a story that goes along with the pictures. Try not to just merely describe what's occurring in the picture. Instead, try to create an actual story based on the series of pictures.

The instructions for the MODEL group followed the instructions given in the TNL test booklet.

Now, I'm going to show you five pictures that go together to tell a story. I'd like you to look at them carefully, then tell me the story that goes with the pictures. Make your story as long and as complete as you can. You can start anytime you are ready. (Gillam & Pearson, 2004, p. 5)

Testing took approximately 15 minutes. Participants were recorded using a TASCAM DR05 digital audio recorder for later scoring and data analysis. The Late for School scoring worksheet separates scoring into two main sections. Each participant could receive a maximum of 18 points for including content items (e.g. boy's name, backpack, moral or ending, etc.) in the production. Participants received a score of 1 for each content item incorporated into their narrative productions and a score of 0 for each item not included. For example, participants would receive credit for the naming content item by simply including a name for the boy illustrated in the picture series. Each content item must be mentioned specifically. If participants did not provide a name for the character in their productions (e.g. He woke up ..., He left for school ...), they would not receive credit for that item. Another potential 12 points could be received for using temporal and causal relationships between events, correct grammar, and story structure. Temporal relationships receiving credit included the use of words "and" or "then," in

addition to adverbial phrases or clauses (e.g. After he ..., Right when he ..., As he was ...). Causal relationships receiving credit included words or phrases such as “because,” “since,” “so,” “therefore,” “as a result.” The examiners’ developed a consistent method of judging some of the more ambiguous productions. For instance, using the word “so” may have counted as a causal relationship in some narratives productions (e.g. So then he ...), but not in others (e.g. So um...). For the latter, the word “so” was treated as a discourse marker and not as a true causal relationship. The points for each section were calculated, resulting in a total of 30 points possible for each participant.

### **Reliability**

Participant recordings were independently scored according to the examiner’s manual instructions by two Communication Disorders undergraduate students. Both undergraduates were previously trained to score the TNL. In total, 20% of the sample was included in a point-to-point comparison for reliability. The reliability was 97.5% for the NO-MODEL group, and 95.8% for the MODEL group.

### **Results**

The Late for School scoring worksheet was used to determine the effect of narrative priming in young adults. To begin, this study aimed to examine whether priming narrative schemata would increase the number of content items included in adult narrative productions. Descriptive statistics are presented in Table 2. Examination of the descriptive data shows an increase in the mean of content items from the NO-MODEL to MODEL group. Results of a one-way ANVOA revealed a statistically significant difference in the number of content items included between these groups,  $F(1, 75) = 25.26, p = < .001$ .

This study also sought to examine to what extent priming influenced certain higher order elements of narrative language. To determine this, one-way ANOVAs were performed comparing the use of causal relationships, temporal relationships, and story organization between MODEL and NO-MODEL groups. Descriptive data shows an increase in the mean of over-all story organization and a decrease in the means of causal and temporal relationships from the NO-MODEL to MODEL groups. Results of one-way ANOVAs did not reveal a significant difference in the use of temporal relationships or over-all story organization between the MODEL and NO-MODEL groups,  $F(1, 75) = .84, p = .36$  and  $F(1, 75) = 2.5, p = .12$ , respectively. However, ANOVA did reveal a statistically significant difference in the use of causal relationships between the groups,  $F(1, 75) = 8.63, p = .004$ .

Table 2

*Summary of Means (Standard Deviations) of the Major Study Variables*

Variable	MODEL (n = 23)	NO-MODEL (n = 53)	<i>F</i>	<i>p</i>
Content items				
Average (SD)	9.13 (3.15)	5.96 (2.22)	25.26	< .001
Causal marker				
Average (SD)	.91 (.90)	1.48 (.72)	8.63	.004
Temporal marker				
Average (SD)	1.48 (.51)	1.59 (.50)	.84	.36
Well-organized				
Average (SD)	1.30 (.63)	1.09 (.49)	2.53	.12

### Discussion

The purpose of this study was to examine the role of priming on adult narrative performance. The results will be discussed in terms of the two main research questions that guided the study. The first question aimed to examine whether priming narrative schemata would increase the number of content items (e.g. boy's name, backpack, moral or ending, etc.) included in adult narrative productions. This study found that participants who were primed with an adult narrative, the MODEL group, included more content items in their narrative productions than the NO-MODEL group. On average, participants in the MODEL group included 9.13 out of 18 possible items, while the participants of the NO-MODEL group included only 5.96 items. As shown in Table 2, the priming of these content items resulted in a significant difference between the two groups. The success of priming in this study may be explained in part by Bandura's (1971) four sub-processes driving observational learning, discussed previously in the literature. These four processes include attention, retention, motor reproduction, and incentive or motivational processes. Humans can observe an action, retain that information in memory, and then reproduce the action observed. Observational learning leads to the development of schemata. Once schemata are formed, they can be activated to help accomplish a variety of tasks. By listening to an adult narrative model containing all of the target content items, narrative schemata of the MODEL group may have been activated. If so, the primed narrative schemata could have aided this group of participants in producing narratives with more content items than the NO-MODEL group. In addition to examining the effect of priming on content items, this study was interested in examining the effect of priming on higher order narrative abilities of young adults.

The second research question investigated to what extent priming influenced the higher order elements of temporal relationships, causal relationships, and story organization. This study found that the MODEL group did not receive higher scores for including an increased number of temporal relationships or for producing stories with better organization than the NO-MODEL group. On average, participants in the MODEL group received a score of 1.48 out of 2 for the use of temporal markers, while the participants in the NO-MODEL group received a score of 1.59. Priming temporal relationships did not cause a significant difference between the MODEL and NO-MODEL groups. These results may suggest that the series of pictures used to elicit participant narratives served as a greater prime for temporal relationships than the model narrative. Since all participants were given the same sequence of pictures illustrating a child's activities throughout the morning, it may have been natural for both groups to use temporal relationships to describe each event depicted in the series (e.g. and, then, after, as). Concerning story organization, participants in the MODEL group received an average score of 1.30 out of 2, while those in the NO-MODEL group received an average score of 1.09. Priming story organization did not cause a significant difference between the MODEL and NO-MODEL groups. These results also may be explained by the use of a picture series. Due to a sequence of illustrations serving as the guide, it is likely that the participants' narratives all followed the same basic order and contained the fundamental elements of a beginning, middle, and end.

In addition, this study found that participants in the MODEL group received lower scores for causal relationships in their narrative productions as compared to the NO-MODEL group. Participants in the MODEL group received an average score of .91 out of 2, while the participants in the NO-MODEL group received an average score of 1.48. Although there was a significant difference between the MODEL and NO-MODEL groups, the group that was primed

with causal relationships received a lower average score than the group that was not primed. Although this outcome was unexpected, there may be a simple explanation. It could be the case that the NO-MODEL group, without a model narrative, struggled more with story content and included an increased number of narrative discourse markers in their productions. Results may reflect participants in the NO-MODEL group using words such as “so” and “because” for the purpose of place holders rather than for actual indicators of causality. When participants’ narratives were coded and scored, these words could have been coded as markers of causality when, in fact, they were only discourse markers. If discourse markers were coded as markers of causality, this could have increased the occurrence of causal relationships in the NO-MODEL group.

Since there has yet to be research conducted on narrative priming, this study cannot be directly compared to prior research. However, the results of this study are similar to the general effects of priming observed in previous studies. As discussed in the literature, Bock (1986) demonstrated that sentences produced by speakers are influenced by the sentences they hear beforehand. In Bock’s study, she examined the effect of priming on two different sentence types, active versus passive transitives, and prepositional versus double object datives. She found the effects of priming to be at work in both, explaining that hearing each sentence type increased the likelihood that participants used the same construction in their own sentences. Likewise, in the current study, the narratives produced by speakers in the MODEL group were influenced by the sentences they had heard previously. By hearing a narrative model containing the target content items, the participants included more of these items in their own productions than those who did not receive priming.

In addition, the findings of this study were consistent with those of Bock and Griffin (2000). Bock and Griffin found that structural priming in adults persisted even when there were intervening sentences between the prime and the target sentence. In the current study, after reading the adult narrative model to each participant, the examiner asked a series of comprehension questions. Following nine questions, participants were told to create their own narratives based on a new series of pictures. For this study, the questions acted as intervening material. Consistent with the Bock and Griffin study, narrative priming persisted even when the intervening material was placed between the target and the prime.

### **Limitations**

There are several limitations to this study. First, the test administered is an evaluation tool used to assess children's narrative performance. Due to the TNL being a measure for children, it has not been normed on adults. Although it could be possible that research participants would perform differently on a narrative assessment measure created specifically for adults, this not been studied. A second limitation of the study was that the TNL was not administered in full to both the NO-MODEL and MODEL groups. Although the TNL consists of three separate formats (no picture, single picture, five picture series), the NO-MODEL group was administered only the five picture series format while the MODEL group was administered all three. Due to this, it is possible that research outcomes could be different if all formats were administered to both the NO-MODEL and MODEL groups. Another limitation of the study was the relatively small number ( $n = 76$ ) of participant's data used in analysis. The NO-MODEL group included 53 participants and the MODEL group included 23 participants. If these groups contained a larger number of participants, the results may be more generalizable as well as reliable. In addition, data for each participant was collected in one session. The possibility of a participant having an



off day was not taken into consideration. A fifth limitation of this study was that all participants were homogeneous in gender. On account of all 76 research participants being female, this study did not produce any data on adult males.

### **Conclusion**

This study suggests that priming improves narrative production in adult participants. It may be beneficial for speech-language pathologists to routinely prime narrative language production. Poor narrative performance, without the use of a prime, may not actually reflect the inability to produce well-formed narratives or even suggest an impairment in narrative language. The results of this study suggest that although narrative schemata may have been present in the minds of the participants, they were not highly activated. It is possible that the model narrative given to the MODEL group of participants stimulated their pre-existing narrative schemata and allowed these individuals to include more content items. This could also be the case for individuals scoring low on narrative production measures as part of a clinical assessment. Perhaps when provided with a model during evaluation to activate their narrative schemata, these individuals would be able to incorporate all of the elements that are socially and culturally expected in narrative performance.

Over time, narrative schemata may become under-activated. While children have significant exposure to picture books and fictional narratives, adults do not typically interact with them as often. Perhaps the less familiar an adult becomes with narrative activities, the less activated their narrative schemata become. Individuals could potentially be misdiagnosed as having a narrative language impairment when, in fact, their schemata have simply become under-activated over time. Priming narrative language, and re-activating those schemata, could

further differentiate between individuals with and without language impairment and minimize possible misdiagnoses.

Tests of adult narrative language typically do not provide primes and, as a result, may underestimate true narrative ability. The points presented here reiterate the importance of using multiple assessment measures and suggest that speech-language pathologists should consider the use of narrative priming before diagnosing a language impairment.

### **Future Research**

Due to the novelty of narrative priming studies, there are numerous directions possible for future research. Studies in the future should consider the narrative productions of participants who are heterogeneous in gender, as well as education level (high school, college, and post graduate). This will allow for better generalization of the results of narrative priming. Another extension of this study could include follow-up assessments. A longitudinal study would provide better understanding of priming and would further investigate whether the effects are purely immediate, or if they persist over time as well. Increasing the variety of narrative stimuli and types of assessment measures would also improve the quality of data.

An important consideration to be made is that standardized tests of narrative language skills, such as the TNL, might measure the ability to transfer a model rather than actual narrative ability. Simply transferring a model would mean that individuals could take the modeled narrative, change the content slightly to fit a new scenario, and unintentionally apply many of the appropriate story elements in their own production. Essentially, it is possible that individuals could mindlessly replicate a story heard previously without having adequate understanding of the content in their productions. Individuals who merely transfer narrative models would not have appropriate knowledge of the components of narrative language or how to effectively use them

and, as a result, would not be able to produce a narrative on their own. If this were the case, individuals could potentially score well on primed narrative assessments even if they possess an impairment in narrative language. Future research should examine the effectiveness of language assessments providing primes and determine if they are useful methods for evaluating narrative language ability.

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*Appendix A*

MODEL Group: Questionnaire

Participant ID \_\_\_\_\_

Date \_\_\_\_\_

**Background**

<b>Date of birth/Age</b>	
<b>Sex (circle)</b>	Male    Female
<b>Race</b>	
<b>Current education level (circle)</b>	Freshman    Sophomore    Junior    Senior    Master's    Ph.D.
<b>Declared Major/Minor</b>	
<b>Cumulative GPA</b>	
<b>Major GPA</b>	

**Language History**

Is English the only language you speak?	Yes    No
If you speak another language, what is it?	
At what level of proficiency do you speak this language? (circle)	<b>Native-like:</b> Equivalent to that of an educated native speaker.
	<b>Full Professional Proficiency:</b> Able to use the language fluently and accurately on all levels pertinent to professional needs.
	<b>Minimum Professional Proficiency:</b> Able to speak the language with sufficient structural accuracy and vocabulary to participate effectively in most formal and informal conversations on practical, social, and professional topics
	<b>Limited Working Proficiency:</b> Able to satisfy routine social demands and limited work requirements
	<b>Elementary proficiency:</b> Able to satisfy routine travel needs and minimum courtesy requirements
	<b>No Practical Proficiency:</b> No practical speaking proficiency
If you speak another language, at what age were you regularly exposed to English?	
What dialect (accent) do you speak?	

**Health History**

Do you have a diagnosed hearing loss?	Yes    No
<i>If yes, what level of loss is it?</i>	Mild    Moderate    Severe    Profound    Other
Have you ever been or are you currently diagnosed with a cognitive, speech, voice, or behavioral disorder?	Yes    No
<i>If yes, please briefly explain</i>	
Have you ever been or are you currently diagnosed with a language, learning, or reading delay/disorder?	Yes    No
<i>If yes, please briefly explain</i>	

*Appendix B*

NO-MODEL Group: Questionnaire

Participant number \_\_\_\_\_

Date \_\_\_\_\_

Age \_\_\_\_\_

Sex:            Male            Female

Current Educational Level:    Freshman    Sophomore    Junior    Senior    MA    PhD

Overall GPA \_\_\_\_\_

**Language/Health Background**

Is English the only language you speak at a conversational level?    Yes    No

If you speak another language, what is it? \_\_\_\_\_

If you speak another language, at what age were you regularly exposed to English?  
\_\_\_\_\_

Do you have a diagnosed hearing loss?    Yes    No

If you have a hearing loss, what level of loss is it?    Mild    Moderate    Severe

Have you been diagnosed with a cognitive, articulation, or voice disorder?

Yes    No

If you have been diagnosed with any of the above deficits, please briefly explain.

\_\_\_\_\_

Have you been diagnosed with a language/learning/reading delay?    Yes    No

If yes, please briefly explain.

\_\_\_\_\_

What accent do you speak? \_\_\_\_\_



**Religious Background**

Among the options below, circle the one that best represents your religious beliefs.

Christianity    Atheism    Buddhism    Agnosticism    Hinduism    Islam    Judaism

If other, please specify: \_\_\_\_\_

If you circled one of the above options, what denomination or subgroup do you identify with, if any?

\_\_\_\_\_

How often do you attend communal religious ceremonies & functions (i.e. church, rituals, gatherings with other believers, etc.)? Circle one.

Never    Rarely    Annually    Several times a year    Monthly    Once a week    More than once a week    Daily

In the past year have you more frequently visited services of your own religious subgroup or other subgroup?

If other, explain: \_\_\_\_\_

How important would you say religion is in your own life?

Extremely    Somewhat    Not very important    No opinion

How frequently do you pray (or the equivalent of prayer)?

Several times a day    Once a day    Several times a week    Once a week

Less than once a week    I don't pray    Don't know